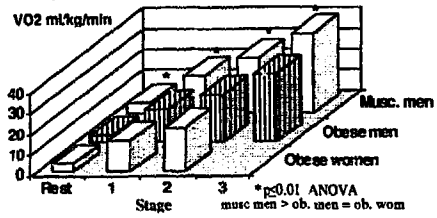
9:45

741-6 Body Composition Affects Exercise Oxygen Uptake Independently of Body Weight

Kyle J. McInnis, Gary J. Balady. *Boston University Medical Center, Boston, MA*

The purpose of this study was to determine the effect of extreme levels of body fat and fat free mass (FFM) on submaximal oxygen uptake (VO2) during treadmill walking. We prospectively evaluated 43 subjects who had the same body weight (BW) by dividing them into 3 different groups based on their gender and body composition: *Obese women* (n = 15) (99 ± 10 kg BW; 42 ± 8% fat; 56 ± 6 kg FFM); *obese men* (n = 14) (99 ± 8 kg BW; 24 ± 5% fat; 75 ± 7 kg FFM); and *lean, highly muscular male body builders* (n = 14) (99 ± 11 kg BW; 8 ± 3% fat; 90 ± 7 kg FFM). VO2 was measured by respiratory gas analysis at rest & at several submaximal workrates while walking on the treadmill without using handrail support.



At rests and at matched submaximal workrates, lean muscular body builders had a significantly higher VO than weight-matched obese men and women. The differences increased as the workrate progressed and reached 28% at the highest workrate. These findings suggest that during treadmill walking, levels of body fat and FFM at the extreme range appear to influence VO2 independently of body weight. This has particular clinical relevance when either fitness level or energy expenditure are evaluated using estimates of VO2 rather than direct measures.

742 Lesion Specific Coronary Interventions

Tuesday, March 26, 1996, 10:30 a.m.–Noon
Orange County Convention Center, Room F1

10:30

742-1 Is ACC/AHA Lesion Classification Predictive of Successful Coronary Intervention in the Era of New Devices?

Edward T.A. Fry, James B. Hermiller, Thomas F. Peters, Charles M. Orr, James VanTassel, Duane C. Berkompas, Frank S. Saltiel, Carmen Ernst, Brenda Erner, Bruce F. Waller, Cass A. Pinkerton. *St. Vincent Hospital, Indianapolis, IN*

New devices for coronary intervention have been developed in an effort to improve outcomes, reduce complications, and broaden the spectrum of lesions amenable to nonsurgical revascularization. Angiographic criteria established by a joint ACC/AHA task force based on experience with balloon angioplasty in the late 1980s have been used by operators, payors, and credentialing bodies to estimate procedural success and risk. To test the current applicability of these criteria in the era of lesion-specific use of new devices, we analyzed procedural outcomes of 1085 lesions (ACC/AHA class A:8%, B1:42%, B2:35%, C:15%) in 784 consecutive patients using balloon angioplasty (84.1%), stents (16.7%), directional atherectomy (1.3%), rotablator (6.1%), and extraction atherectomy (2.2%). A single device was used in 76.4%, two in 22.9% and three in 0.7%. Overall procedural success (residual stenosis < 50%, no MI, death, or emergency CABG) was 95.9%: A = 100%, B1 = 97.3%, B2 = 97.1%, C = 87.4% ($p < 0.05$ C vs A and B). For a given lesion class, no difference was observed among devices except for type C lesions: success with rotablator = 66.7% vs 100% with stents ($p < 0.05$). By univariate analysis, predictors of procedural failure included: lesion > 20 mm long, TIMI-1 flow, calcification, angle > 90°, and chronic total occlusion.

In conclusion, current procedural results for all coronary interventions are much better than predicted by current ACC/AHA criteria. However, selected angiographic features and class C lesions are still associated with lower rates of success. Development of a new classification system may improve prediction of outcomes and enhance appropriate device selection.

10:45

742-2 Recanalization of Chronic Total Coronary Occlusions Using a Laser Guide Wire: The Eu and US Total Experience

P. W. Serruys, M. Leon, J. N. Hamburger, J. Popma, W. Rutsch, W. O'Neill, D. Mathey, S. Oesterle, R. Simon, P. Gilmore, E. Fleck, J. Margolis, J. Koolen, F. Litvack, A. Buchwald, J. E. Tcheng. *Thoraxcenter, University Hospital Rotterdam, The Netherlands; Washington Hospital Center, Washington D.C.*

Despite continuous improvement of mechanical hardware for coronary angioplasty, total occlusions (TO) remain a true challenge in the field of interventional cardiology. To assess efficacy and safety of the Spectranetics laser guide wire (LG), in 20 European and 10 US centers a multicenter Surveillance Study was conducted as a preamble to the European-American randomized Total Occlusion Trial with Angioplasty assisted by Laser guide wire (the TOTAL trial). *Methods:* Since May 1994, 306 patients with TO (TIMI 0 or TIMI 1 flow) were included. Angiographic exclusion criteria were the absence of a visible entry point or the inability to visualize the distal true lumen through collateral circulation. Results are presented as mean ± SD, unless otherwise indicated. *Results:* Analysis was completed in 252 patients (age 60 ± 10 yrs), (TIMI 0 n = 202, TIMI 1 n = 50). Vessel distribution was RCA n = 129, LAD n = 83, and LCX n = 40. The median angiographic age of occlusion, was 12 weeks (range 1–1040), when based on clinical data 27 weeks (range 2–1040). The occlusion length was 18 ± 10 mm. By using the LG, the TO was successfully crossed in 145 patients (58%). LG perforation occurred in fifty-four cases (21%), in two patients (0.8%) leading to tamponade (non-surgical drainage) due to the advancement of an angioplasty device over the LG into the free pericardial space. In six patients (2.4%) in-hospital serious adverse events were reported: four non Q wave MI's, one repeat PTCA for sub acute re-occlusion, one renal failure (due to dye overload) and one retroperitoneal bleeding requiring blood transfusion. *Conclusion:* In awaiting the results of the TOTAL trial, these results are encouraging and indicate that the LG is a powerful additional tool in the treatment of TO.

11:00

742-3 Angiographic Outcomes After Arterial Recanalization of Refractory Occlusions With the PRIMA™ Excimer Laser Wire

Jeffrey J. Popma, Martin B. Leon, William O'Neill, Stephen Oesterle, James Margolis, Ronald Masden, Neil Eigler, Paul Gilmore, Abdel Brahimi, Ann Greenberg, William Kerker, Theresa Bucher for the USA TOTAL Investigators. *Washington Hospital Center, Washington, DC*

Failure to pass conventional guidewires into the distal arterial lumen is a frequent cause of procedural failure in pts with coronary occlusions (CO). To assess the safety and efficacy of the PRIMA™ excimer laser wire for coronary recanalization, we reviewed the outcomes of 56 pts undergoing PTCA of CO (angiographic occlusion: 66 wks). All CO had unfavorable anatomy or were refractory (38%) to conventional guidewire crossing. *Angiography:* Bilateral coronary arteriography, 52%; biplane coronary angiography, 63%. Location: RCA, 48%; LAD, 32%, LCx, 20%. Ipsilateral (77%) or contralateral (70%) collaterals were noted in all pts before PRIMA™ use. Occlusions were either blunt (57%), central (27%), or eccentric (15%) and in 32% involved major side branches. The average occlusion length was 12.8 ± 8.4 mm and average stump diameter was 2.49 ± 0.63 mm. Average duration of the PRIMA™ attempt was 37 minutes (60 mJ 25–40 Hz); the average procedure duration was 2.5 hours. *Results:* Laser wire recanalization was achieved in 35 (63%) lesions, followed by excimer laser in 17 (49%) pts, rotational atherectomy in 2 (9%), and stent placement in 15 (32%). There was no death, Q-ABSNQ>3ave MI, or emergency CABG. Although perforations were noted after the laser wire in 15 (27%) of pts, there were no important clinical or angiographic sequellae. Overall procedural success was obtained in 34 (61%) pts. *We conclude:* PRIMA™ wire therapy of refractory or unfavorable chronic CO results in an encouraging rate of recanalization with infrequent complications and represents an important new tool for advanced coronary interventionalists.

11:15

742-4 Randomized Comparison of Balloon Angioplasty Versus Coronary Stent Implantation for Total Occlusion

Yasukazu Sato, Hideyuki Nosaka, Takeshi Kimura, Masakiyo Nobuyoshi. *Kitakyushu, Kokura Memorial Hospital, Japan*

This prospective randomized trial was designed to assess efficacy of stent (ST) in the management of total occlusion (TO). Follow up angiography was to be studied at 24 hours, 3 and 6 months. Quantitative coronary angiography